It is difficult to predict the chances for further disturbances along this part of the coast. The statistical evidence would indicate that mussel poisoning runs in cycles of several years' duration, and it is not unlikely that the cases described by Doctor Stegeman are the first of a series to follow during the next few years. Since mussels will always be consumed in spite of any quarantine measures imposed, it will be wise to be on the lookout for cases of this disease during the summer and early fall, especially in the northern part of the state.

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J. C. GEIGER, M. D. (1085 Mission Street, San Francisco).—As a result of scientific investigations carried on for a number of years at the George Williams Hooper Foundation for Medical Research of the University of California, the California State Department of Public Health has, for several years past and for suitable seasonable periods, issued warnings against the use of mussels as food. Cases of poisoning have been reported particularly in counties north of San Francisco. Previously, Meyer, Sommer and Schoenholz [1] had reported a source of danger in the mussel in California which evidently can be attributed to poisons that occur within the food itself. Though the origin of the poison was not definitely established, it was determined that the poison is not formed by bacteria, thereby eliminating the question of polluted basins; that the poisonous mussels cannot be distinguished from the safe; that the poison is heat stabile in acid solutions, and also that the poison is probably the result of a metabolism disease influenced by the food and spawning condition of the shellfish. Apparently it may be necessary to establish, at least for California, and possibly for Oregon, a closed season for the summer months for the use of mussels.

Moreover, epidemiologic evidence is accumulating to the extent that, in areas of the California coast, the poisoning does occur periodically in an increased number of human cases. This periodic increased incidence was manifest in 1927, 1929, and 1932. Should this epidemiologic assumption be correct, then there may be anticipated for 1934 a marked epidemic recurrence of the poisonings in the selective seasonal periods, namely, the summer months, and particularly, June, July and August, provided like conditions in the mussels of previous high-incidence years obtain. The most interesting and valuable observation of recent research in these poisonings has been that of H. Muller,[2] of the Hooper Foundation, which shows that the addition of ordinary bicarbonate of soda to the cooked mussels, in such small amounts as a tablespoonful to a quart of material will, in experimental laboratory animals, either reduce the effect of the poison or quite often cause it to be avoided entirely.

The symptoms of tingling or numbness around the lips, and a prickly feeling in the finger-tips and toes thirty minutes or longer after eating mussels, should be notification to call for a physician immediately.

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WILFRED H. KELLOGG, M. D. (State Hygienic Laboratory, Berkeley).—Mussel poisoning comes in the category of accidental poisonings with food materials that are widely used and ordinarily harmless, but that for various reasons occasionally have lethal properties. Botulism is one where the poison is due to bacterial contamination and improper canning methods; mushroom poisoning to error in selecting a poisonous species; and poisoning by mussels, possibly due to physiological change, is to be guarded against by observing seasonal danger periods.

As Doctor Stegeman has observed, the explanation of this occasional toxic condition of mussels is not definitely known. The seasonal occurrence of toxicity, and the certainty that spoilage or bacterial toxins have nothing to do with it, is suggestive of something analogous to the poisonous qualities of certain other forms of life in connection with ovulation; but the varying intensity in different years remains unexplained. Another possibility is that the poison has its source in some food supply of the shellfish, not, however, of a bacterial nature.

The varying symptoms that have been reported show that not all cases of mussel poisoning are due to the specific toxin. A few cases do not manifest the classical paralysis, but instead have gastro-intestinal symptoms or urticaria and dyspnea. The former can well be ordinary bacterial food poisoning, and the latter a manifestation of protein hypersensitiveness.

The prevention of mussel poisoning is entirely a matter of education. If knowledge of the possibility were universal, poisoning would be restricted to those who disregard the obvious precaution of eliminating mussels from the diet. There is nothing in the theory that mussels gathered below the low tide level are safe, or that cooking destroys the poison. Cooking, with the addition of a tablespoonful of bicarbonate of soda to the quart of water, does, however, destroy a considerable portion of the toxin.

[1] Meyer, K. F., Sommer, H., and Schoenholz, P.: Mussel Poisoning, J. Prev. Med. 2:365 (Sept.), 1928.

[2] Muller, H.: Mussels and Clams—A Seasonal Quarantine—Bicarbonate of Soda as a Factor in the Prevention of Mussel Poisoning, Calif. and West. Med., 37:263 (Oct.) 1932; 37:326 (Nov.), 1932.

THE RADIOLOGIST IN THE HOSPITAL—HIS STATUS*

By LOWELL S. GOIN, M. D.
Los Angeles

DISCUSSION *by Henry Snure, M. D., Los Angeles; L. H. Garland, M. D., San Francisco; Charles M. Richards, M. D., San Jose.*

THAT the relationship of the radiologist and the hospital, and the varying activities of hospital departments of radiology, present a problem will be generally admitted. That these relationships and activities offer a serious threat to the private professional activities of radiologists, and indeed to practitioners of medicine in general, is frequently postulated. Right or wrong, the physician feels that there is a growing tendency of the hospital to exploit him; to attempt to profit through his professional skill; and he fears that the end of it will be that he will become the hired employee of the hospital. The hospital, on the other hand, feels that the conduct of a department of radiology is an activity proper to the hospital; that it is, by the very nature of things, forced to conduct a department such as this, and that it is very likely that such a department may be made to show a profit.

PROBLEM OF THE RADIOLOGIST AND THE HOSPITAL

Obviously, the solution of a problem cannot be arrived at until and unless the problem is clearly stated. It is in the hope of stating this problem, as well as of helping toward its solution, that this material is presented. Just what is the problem, therefore, that we feel is present? We complain; we feel aggrieved; we say to each other that we are being exploited, that our professional prerogatives are being infringed upon. What is it that we complain of? Are we being exploited? Is the problem general? Or are we being confused by local situations arising from local jealousies, personal prejudices and the like?

* Read before the Radiology Section of the California Medical Association at the sixty-third annual session, Riverside, April 30 to May 3, 1934.

TO WHOM A QUESTIONNAIRE WAS SENT

It was in the hope of being able to answer these questions, of being able to state clearly the problem, and of determining whether it is a sectional or a national situation, that questionnaires were sent to three hundred and seventy roentgenologists, representing practically the entire membership of the American Roentgen-Ray Society. Since the membership of this society is, in general, comprised of men of considerable training and experience, and since, in general, it might be expected that these would be among the established men in each community, and since the scope of questionnaires covered the entire United States, it is reasonable to assume that the conclusions drawn from the survey are a fair cross-section of the national condition of radiologists and their hospital relationships. In spite of the fact that 10 per cent is a fairly good return for a questionnaire of national scope, three hundred and sixteen replies (or over 85 per cent) were received, and it may be remarked that this figure indicates the degree of interest felt over the entire country in the whole question.

SOME REPLIES

The questionnaire was very simple. The most casual survey of the replies showed that almost everyone either misunderstood question No. 3—"Have you complete control of the department?"—or had not reflected deeply on the meaning of "control." Almost everyone answered this question with "yes," but answered question No. 4—"Who owns the equipment?"—question No. 5—"Who hires and discharges the technical and office help?"—and question No. 6—"Who pays the salaries of the department employees?"—with the words, "The hospital." Since it is still true that "he who pays the piper may call the tune," it is a little difficult to see just what control a man may exercise over a department owned and disciplined by a hospital, and conducted for the hospital's profit or at the hospital's expense. Therefore, it has been decided, purely arbitrarily, that the answer to question No. 3 shall be considered to be "no" unless the answer to question No. 5 is "the radiologist"; it being conceded that if the radiologist possesses disciplinary power over the various assistants in the department, he is, in fact, in control of it. No other changes have been made in any of the replies.

Of the 316 men who replied, 272, or 86 per cent, have a hospital radiological service. A considerable number have more than one service, so that 272 men serve 342 hospitals. Of these, fifty-three, or 21.8 per cent, are full-time employees of hospitals, and 190 are on a part-time basis. Stated differently, and from the standpoint of the number of hospitals served, fifty-three hospitals have full-time radiologists, while 289 hospitals have part-time men in charge of their x-ray departments.

TYPES OF COMPENSATION

About 6 per cent (fifteen) of the radiologists so engaged received nothing for their services. This peculiar phenomenon seems to be confined to the eastern states, and almost entirely to New York City. Seventy-five radiologists (30.9 per cent) receive a salary for their services, while 154 (63 per cent) are allowed a percentage of the department receipts. Of those receiving a percentage, fifty (30 per cent) divide the net receipts of the department, while 104 (70 per cent) share in the gross receipts, the percentage received by the radiologist varying from 30 to 85 per cent of the gross.

The x-ray department is under the actual control of the radiologist in 124 hospitals, while in 177 hospitals he has no real control. In 218 instances the hospital owns the equipment of the department, and in eighty-seven hospitals the radiologist is the equipment owner.

The salaries of the department employees are paid by the radiologist in fifty-one hospitals, but by the hospital in 243 institutions.

Only in twenty hospitals is the radiologist not a member of the senior staff.

Two hundred and seventy-two radiologists derived 36.6 per cent of their professional income directly from their hospital connections. Only ninety-five of those reporting expressed themselves as dissatisfied, but it is very likely that this question was misunderstood, many having apparently considered the inquiry to be whether they considered themselves adequately paid for their services.

COMMENT ON THE ABOVE

From the foregoing we may now represent to ourselves, with reasonable confidence, the average radiologist in his relationship to the average hospital. He is a man having a private practice of his own, serving a hospital as its radiologist on a part-time basis, and being paid therefor by receiving a percentage of the gross receipts of the department. No fault can be found with this arrangement, provided:

1. That he is selected on the basis of his professional skill and reputation, rather than because he will accept a smaller percentage of the receipts than another physician.
2. That he is in control of the department.
3. That the division of the gross is on such a basis that the percentage retained by the hospital is that which fully covers the expense of conducting the department.
4. That he is a member of the senior staff.
5. That the hospital does not compete with him in his private practice, or at least that it does not do so on an unfair basis, such as lowering fees and the like.

COMMENT

But are these conditions commonly met? The twelfth question of the questionnaire which furnished this material concerned any comment the respondent cared to make. Nearly everyone answered this in from a few words to several pages of remarks concerning his own situation in particular, or the situation in general. It will be appropriate here to quote or give excerpts from a few of them: "They (the hospital executives)

feel that the x-ray department should be a money-making activity of the hospital."

(Speaking of the boards of trustees): "Their obsession is the use of the radiological department as a source of revenue for the hospital; an attitude that they never take toward surgery or where other staff members are concerned."

"The directors (of the hospital) want an increasing percentage as the volume is increased by the efforts of the radiologist."

"There is a definite tendency on the part of hospital administrators to exploit the roentgenologist." (There were a great many comments of this nature.)

These remarks, chosen from many because they are by men in widely separated parts of the country, voice the feeling of nearly every radiologist: That the hospital has no right to profit by the conduct of its x-ray department, because the activities of that department are essentially those of its director, the radiologist, and are therefore purely professional. For this hypothesis we have formidable support. The Council on Medical Education and Hospitals of the American Medical Association has stated plainly that radiology is the practice of medicine, and has long recognized it as a medical specialty. One of the sections of the scientific assembly of the association is that of radiology. The Council of the California Medical Association has taken the same position. One may, therefore, confidently say that the use of the x-ray in and for the diagnosis and/or treatment of disease constitutes the practice of medicine. This being assumed as a premise, one may next inquire whether a hospital should, as a matter of ethics, or may, as a matter of law, practice a medical specialty? A corporation is a fictitious person, existing only in legal contemplation and, as such, cannot be licensed to practice a learned profession. The Supreme Court of Nebraska points out that "while a corporation is in some sense a person, ———, yet it is not such a person as can be licensed to practice medicine."

But, it may be argued, the hospital is not practicing radiology; it is merely engaging a physician to do so. If the hospital does not profit by the professional activity of a physician so engaged, the argument may be tenable. But this is certainly not the case with those hospitals employing salaried radiologists and representing 30.9 per cent of the hospitals on which returns were had, and it is doubtful whether it is the case in the hospitals paying their radiologists by a division of the net proceeds, which represent about 30 per cent. If a hospital, or any corporation, hires a physician, accepts a patient for x-ray examination, and collects a fee, is it the hospital or its hired physician that is practicing radiology? A parallel question has been answered by the Supreme Court of Minnesota, in the case of *John Granger* vs. *Adson, et al.,* as individuals and as members of the State Board of Medical Examiners. In this case the court held that a layman could not conduct a health audit service, furnishing urinalyses and blood pressure tests, through the medium of employing a licensed physician to do the actual work, and it held that in so doing, the plaintiff in this case was practicing medicine unlawfully. The court further held that the plaintiff's contract with his physician was illegal and in violation of the statute. In summing up the matter the court stated that "the law intends that the patient should be the patient of the licensed physician, and not of corporations or laymen."

Such activities of a hospital lead to further abuses. The physician, knowing that he is engaged in the practice of a learned profession, and bound by the code of ethics thereof, cannot cope with the type of competition offered by corporations not so bound. Comment on this aspect of the matter, such as the following, selected from widely separated places, was offered by numerous men:

"The hospitals compete with the private practitioner, and attempt to secure his private practice."

"Both hospitals compete with me in private practice, and I have no control over the fees charged." (The author of this comment serves both of the hospitals referred to, and therefore, of course, he is actually competing with himself.)

"——— Hospital receives non-hospitalized patients for x-ray examination, and for the sole purpose of adding income to the hospital. In other words, this tax-free institution, with equipment that has all been donated, is actively competing with me in my private practice."

"The hospitals here are slowly, but surely, taking most of our private practice, and we are doing the work for them."

As an especially apt illustration of the point in question, a man who is radiologist to a hospital with five hundred beds in a large city, writes: "The hospital insists that the members of the staff send all of their x-ray work to the hospital, ignoring Doctor ——— and myself. They make no effort to charge or collect more than the cost of the films, and the average fee for a gastro-intestinal examination is $5. How can one expect or hope to conduct a private practice, and to do good scientific work in the face of such competition?"

One man sounds an ominous note of warning when he writes: "The same thing which has happened in radiology has happened in many localities in other fields of medicine."

CONCLUSIONS

We may now, perhaps, attempt to draw some conclusions from the replies received.

1. The great majority of radiologists have some sort of hospital service, and from it they derive a percentage of their professional income, varying from less than 5 to 100 per cent. The general average is 36.6 per cent.

2. The average radiologist reports that he is compensated by a percentage of the gross receipts of the department; but one need not be surprised to discover that there is considerable misapprehension of the meaning of "gross income," since many used such expressions as "gross after supplies," "gross after salaries," etc.

3. Except for university hospitals, almost none of the great hospitals of the country employ salaried radiologists, and very few of the nationally

known men replying are on a full-time basis. This, again, is excepting men with teaching positions.

4. There is an increasing tendency of the lesser hospitals to employ a salaried radiologist.

5. There is an increasing tendency of the hospital to regard the department of radiology as a source of income.

6. The majority of radiologists have no control over their departments.

Finally, we may inquire whether there is any workable and practical plan which will solve the difficulties we have discussed; that is, whether such plan or plans are in operation, and what comments were made by men working under such arrangements? There are plans of operation of hospital x-ray departments which are eminently satisfactory to both the hospital and the radiologist. The plan used by Doctors Groover, Christie, and Merritt is perhaps the best known, and is certainly a well-tried one, being, in brief, this: The hospital provides and arranges adequate space, and installs equipment selected by the radiologist. The amount to be expended is agreed upon, and any amount above this figure is furnished by the radiologist. The radiologist agrees to furnish full-time service in the department, and accepts full control of and responsibility for the department. He undertakes to maintain the department, making all necessary replacements of, and additions to, the equipment, and to employ and pay all necessary assistants, and to furnish all supplies, etc. He agrees to do any reasonable amount of work for deserving poor patients without charge for his services, and for exceptionally poor patients without charge for either service or materials. The radiologist collects and retains all fees and pays the hospital an annual rental.

Of the three hundred and sixteen men replying, eighty-seven own the x-ray equipment of a hospital, and conduct their private practices in the hospital. In one instance the hospital and the radiologist own the equipment jointly. This plan is, of course, free from criticism, since it really amounts to a physician leasing office space from a hospital rather than from an office building.

How do such plans work out in practice? From a large hospital in a large city comes this reply: "Because of the high standards our department maintains, the trustees have felt satisfied with the arrangement despite the fact that the department is not a source of income. Of course a properly managed roentgen department indirectly increases the hospital income." From another large city is this comment: "This is the only way we would do hospital work. We bring a steady flow of therapy cases to the hospital, and much of the diagnostic work comes because of our connection"; and again: "The hospital is well satisfied, although the department produces no income for the hospital, because of the high standards maintained by the department of radiology."

BASIC PRINCIPLES

Apparently, then, it is possible to conduct a hospital department of radiology in a manner free from objectionable methods complained of, and in a manner satisfactory to both the hospital and radiologist. To do so, requires only that all concerned recognize clearly:

1. That the practice of radiology is the practice of medicine.

2. That radiology is a medical specialty.

3. That hospitals and/or other corporations should not engage in the practice of medicine, and,

4. That radiologists should not enable hospitals to engage in the practice of medicine by becoming their salaried employees.

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DISCUSSION

HENRY SNURE, M. D. (1414 South Hope Street, Los Angeles).—At the request of Doctor Goin, I reviewed the questionnaires that were returned, and I believe that he has given an accurate and excellent résumé of the same. The majority (63 per cent) of those operating radiological departments in hospitals were on the percentage basis; the most unsatisfactory arrangements, of course, were those of the fifty radiologists who were paid a percentage of the net income, and due, perhaps, to the depression, some hospital business managers include items that do not properly belong under operating costs of the department. The statement was made many times that a percentage of the net arrangement is a slow but sure form of professional suicide. Another frequently repeated complaint was that any profit the hospital derived from the salary or percentage plan was diverted to the general fund to cover deficits in other departments, thereby allowing the radiological department to deteriorate. In other instances, hospitals did not live up to their agreements; one of these could hardly use the present depression as an excuse, for it agreed ten years ago to keep the department up to date in the matter of equipment, and yet had not purchased any new equipment during the ten-year period. Naturally, the department has much less income now than when it was first installed.

In other instances roentgenologists have installed equipment in hospitals and gradually built up the income of the department, only to have the hospital management demand a larger percentage. In one such instance, the roentgenologist was glad to sell his equipment and get out. This particular department is now being operated by his former technician, and no change in the rating of the hospital has been made by the College of Surgeons. Sometimes the radiologist has built up a good income for the department, and as a reward has been promptly discharged when someone else was found who would accept the position at a lesser percentage of the income.

There were several examples of the following: Fifteen to twenty years ago, departments were installed and, until recently, operated by the same radiologist; when he was discharged, and so-called business management applied to the department. Apparently, the result was the same in all cases: the various economies, such as cheap technical help, were applied, and promptly and markedly decreased the departmental income. Not only were the radiologist, patient, and referring physician dissatisfied, but also the hospital itself.

Occasionally, where the radiologist was frankly dissatisfied with his particular arrangement, he would suggest what he believed to be an ideal agreement; yet reports from other questionnaires would show that such an agreement had been tried and found wanting. As an example, a physician in the Southwest thought that it would be a good plan to have the hospital equip an x-ray department, pay technicians, and charge only for the technical service; the radiologist to put in a separate bill, the same as a surgeon would. Just about one hundred miles north of this physician's location such a plan was being tried, and was very unsatisfac-

tory. In this case the hospital collected for the technical charge, and the majority of the patients refused to pay any professional charge; having paid one radiological fee, they claimed that was enough, and apparently the hospital did not exert itself to explain or further collect from the patient. It seems difficult to convince the patient and others also that a cheap fee can only mean cheap service, and so in the end they get just what they pay for. Of the seventy-five roentgenologists doing work on a salary basis, very few are on full time after the number of teaching positions have been subtracted; the majority are receiving salaries for part-time work at government-owned or small hospitals. As Doctor Goin pointed out, the hospital employing a roentgenologist on a salary is really a corporation practicing medicine, and therefore, for the same reason, the roentgenologist should avoid making such an agreement.

In some of the larger hospitals the clinic or charity work was done without a professional charge in lieu of rent; again, others paid 10 per cent of the gross income as rental, when the equipment and technical cost was paid for by the radiologist. Under the heading of "Remarks," one reply states that previous to 1930 the percentage basis was satisfactory; but that the tremendous increase of free work, and the accompanying decrease in both number of cases and scale of fees from those able to pay, does not provide sufficient income to cover expenses.

Many of the radiologists believe that the radiological department should be equipped by the hospital and leased to them, perhaps on some form of gross percentage, something on the order of the Christie plan. Two of those replying stated that any type of percentage basis smacked of fee-splitting.

I believe that our national radiological societies should consult the College of Surgeons and the American Medical Association Council on Medical Education and Hospitals, with the idea of calling their attention to some of the questionable arrangements between hospitals and radiologists; these arrangements to be considered when the rating of the hospital is determined.

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L. H. Garland, M. D. (450 Sutter Street, San Francisco).—The author is to be congratulated on collecting and analyzing a large number of *facts* on a subject about which there has been much discussion, and concerning which many unfounded opinions have been expressed. The status of the radiologist in the hospital is, in general, not sound. What can be done to make it sound without at the same time interfering with the rights of the hospital in the matter? Doctor Goin suggests that one solution would be for the radiologist to rent space and major equipment from the hospital, reimbursing the latter monthly, and thereat conduct a practice of radiology. This would appear to be a simple, fair and practical method of solving the problem in many institutions.

What are the criticisms of this method? From the point of view of the profession, I doubt if there are any valid ones. From the point of view of the hospital superintendents, I have heard voiced the following criticisms, which I shall attempt to answer seriatim:

First criticism: "Hospitals, needing all the income they can get hold of in order to operate, would go into the red without the profits from the x-ray departments." The answer to this criticism is that the "rent" provided by the radiologist will supply the hospital with adequate income to prevent going into the red, as far as such can and should be prevented by any one division of the hospital alone. Parenthetically, it may be noted that the present basic ward bed charge of approximately $3.50 per diem is hardly a true one; actually, the cost is probably much higher, the difference at the present time being made up from the profits from the x-ray and laboratory departments, and it seems unfair that patients who do not require such procedures as x-ray and laboratory work should at present be receiving the benefits of them indirectly. That is to say, the profits made from patients requiring x-ray work, etc., are now applied to lowering the per diem bed charges of patients not needing such work. This could be gradually rectified under a rental arrangement.

Second criticism: "The radiologist is not practicing medicine and, therefore, is not entitled to an arrangement based on the assumption that radiology is the practice of medicine." This criticism is frequently made because of the fact that much, or all of the technical work of radiography is done by the technician, and because sometimes the radiologist merely sees the films and not the patient. This is a comprehensible criticism, if based on these grounds. However, it must be noted that the incentive to treat patients as individuals, to establish a close personal contact with them, is not encouraged in any form of salaried or other "hired type" of appointment. In those hospitals, wherein the radiologist is on a percentage basis, it will often be found that he is keenly interested in seeing the patients, and not infrequently radiographing them himself; that is to say, he practices medicine as he would in his own private office. However, just as the surgeon may have his nurse remove stitches or change a dressing, just as the internist may have his assistant inject some iron cacodylate or take a blood pressure, so will the radiologist have his technician take films of the chest or lumbar spine. Because the surgeon and the internist frequently delegate those technical matters to lay assistants is no ground for stating that they are not practicing medicine. Similarly, because the radiologist delegates much or all of his technical radiographic work to technicians, is no ground for stating *he* is not practicing medicine; his interpretation of the films and fluoroscopic examinations, and his consultations with the clinician seem to be very definitely the practice of medicine. In addition, most radiologists do therapeutic radiology; no one will gainsay that this constitutes practicing medicine.

Incidentally, it appears that, strictly speaking, the technical side of radiography cannot be undertaken as such by lay persons or a corporation. Since the taking of x-ray films involves a knowledge of anatomy and involves the application of a rather dangerous agent (the x-ray) to a portion of the human body, it would seem to be very definitely the practice of medicine, and therefore something that should only be done by a duly licensed physician and surgeon, or by a trained assistant under his close supervision and control.

Third criticism: "The radiologist has no right to have provided for himself a monopolistic practice." The practice of radiology in a hospital unquestionably tends to be somewhat monopolistic in nature. The reason for this is obvious: even granting that a hospital could legally furnish supplies and technical help, no department has ever yet been able to function satisfactorily without a permanent director in charge. If the department were run unsupervised and open to any radiologist or physician who chanced to come in and use it, the difficulty of securing safe, consistent and reliable records would be very great. By the very nature of the overhead involved it is, of course, impossible to have several x-ray departments in the same hospital. However, in most hospitals, if any attending clinician desires that one of his patients be examined by an outside competent radiologist, he can always secure such by merely requesting the resident radiologist to extend that courtesy. Hence, as far as that aspect is concerned, there is no essential monopoly. Lastly, the hospital does not actually provide the practice; the attending physicians, and the radiologist himself to a variable extent, provide that practice.

Fourth criticism: "The radiologist would make too large an income on a rental basis." The answer to this criticism involves the definition of what is too large an income. If by too large an income is meant one disproportionate with that received by the hospital, because of the fact that the rental paid does not

represent a fair and adequate one, then this criticism is sound. Again, if the fees charged by the radiologist are such that he is obviously capitalizing on his appointment, it is evident that his income can be too large. (In both these instances, the errors can be speedily corrected as outlined below.) If, however, by reason of his skill and professional competence the radiologist earns a large income, then the hospital can have no criticism to make; indeed, it is in a fortunate position, since by the very nature of the volume of x-ray work involved, the hospital will be the gainer both in room occupancy and otherwise. The conscientious radiologist of necessity employs a considerable number of well-trained and well-paid assistants, spends a considerable portion of his income on new diagnostic and therapeutic adjuncts, and is usually under a strong incentive to do much deserving clinic work. If, on the other hand, he is not conscientious, the executive staff of the hospital has the power to recommend the termination of his appointment.

I sincerely believe that some form of solution such as the above is a satisfactory one for the problem presented. The hospital does not relinquish control of the department, inasmuch as the rental contract can be annulled at any time (by either party) upon reasonable notice, and the personnel of the department and its general policies are subject to approval by the hospital. The rental plan would aid in establishing the status of the hospital fairly in medical practice, and quite as fairly in establishing the status of the radiologist in the hospital.

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CHARLES M. RICHARDS, M. D. (303 Medico-Dental Building, San Jose).—This survey which Doctor Goin has made for us is one of real value—which cannot always be said of reports on questionnaires. The chief basis of its value lies in the fact of the unprecedented response which it received and the widespread geographical distribution of that response. With an 85 per cent response from such widely separated parts of the country, no one can doubt the validity of the deductions drawn from this investigation.

It appears that only a small proportion of the leading radiologists of this country consider their own hospital relations ideal, and that a great deal of educating needs to be done if hospital executives and trustees are to realize the justice of the radiologist's claims. The abuses of the radiological department of hospitals have been going on for so many years that they have come to be taken as a matter of course. Hospital budgets have been set up, allowing for a profit from the x-ray and pathological departments to make up for some of the losses in the surgery, rooms, and wards. It has been considered quite a legitimate thing, and no one, until recently, has risen to expound the injustices of the practice. I am sure that we all believe that practically all the public-spirited laymen who give so much of their time freely, acting as directors and trustees of the hospitals of our country, would not knowingly work an injustice to any member of their professional staffs, though, in their enthusiasm to see their hospital get along, they have been parties to the exploitation of their radiologists and pathologists. I feel convinced that a great deal can be done by all of us in the education, along these lines in a quiet way, of our lay-trustees, and the majority of them will eventually see our point of view and agree with us. Also the hospital executives, who are laden with the burden of running their hospitals with as little loss as possible, will be open to reason, and will eventually unlearn the lesson which has become firmly fixed in their minds, that the professional efforts of the radiologist and pathologist are legitimate sources of profit to the hospital. The American Hospital Association and the hospital section of the American Medical Association are showing a willingness to assist in this reëducating, and I believe that we shall soon be speaking to more receptive ears than we have in the past.

COMPULSORY HEALTH INSURANCE*

By FREDERICK L. HOFFMAN, LL. D.
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IV

IN the background of all social insurance propaganda looms the spectacle of the economic distress of the medical profession. From practically every country come alarming reports of an oversupply of doctors, the growth in number being disproportionate to the growth in population. In the words of Dr. Alfred Cox of the British Medical Association, in an address on "A General Medical Service for the Nation," delivered last July before the Royal Sanitary Institute Congress at Blackpool, "all the resources of medical science should be available to every citizen of this country." To achieve this purpose, however, would stretch the resources of any country to the breaking point. Once more, in the words of Doctor Cox, "A scheme was wanted which would gather together all the various means, individual and institutional, for the promotion of health, and the cure and alleviation of diseases, and make them available to everybody." Such an idea, it may safely be asserted, is a hopeless dream.

RATIO OF DOCTORS TO POPULATION

The statement is frequently made that in the United States the ratio of doctors to population is much higher than elsewhere. In 1931, it was calculated that the ratio of doctors to population was one in 800, as compared with 884 for the British Isles, 900 for Austria, 1250 for Switzerland, 1560 for Germany, and 2860 for Sweden. Yet the death rate for Sweden in 1932 was only 11.6 per 1000, as compared with 11.2 for the United States, and 12.0 for England and Wales.

The "Social Dangers of an Oversupply of Physicians" are admirably presented by Dr. Walter L. Bierring of Des Moines, Iowa, in a paper read at the annual conference of Secretaries of Constituent State Medical Associations, September, 1933, and reported upon in the American Medical Association *Bulletin* of February, 1934. Doctor Bierring observes that "over a ten-year period the number of medical graduates greatly exceeded the number of deaths in the medical profession." And further: "According to the final report of the Commission on Medical Education, the United States has more physicians per unit of population than any other country in the world, twice as many as the leading countries of Europe. With a total of 156,440 licensed physicians in the United States at the present time, there is one for every 780 persons." He estimated that a reasonably complete medical care could be provided in this country on the basis of one physician to about 1,200 persons, and that an adequate medical service for the United States could probably be pro-

*One of a series of articles on compulsory health insurance, written for CALIFORNIA AND WESTERN MEDICINE by the well-known consulting statistician, Frederick L. Hoffman, LL.D. Articles in this series were printed in previous issues, as follows: I, in April, page 245; II, in May, page 361; III, in June, page 411.